

**REMARKS**

**I. Status of Claims**

Applicants have amended claims 1, 8, 9, 13, and 14 as set forth above. These amendments are supported by Applicants' specification at, for example, page 13, lines 8-33 and Fig. 2. Therefore, the amendments to claims 1, 8, 9, 13, and 14 do not introduce any new matter. Claims 1, 3, and 6-23 remain pending with claims 1, 3, 6-9, and 13-23 under current examination and claims 10-12 withdrawn from consideration.

In the Final Office Action<sup>1</sup>, the Examiner took the following actions:

- (a) rejected claims 1, 6-9, 13, and 14 under 35 U.S.C. § 103(a) as being unpatentable over either Horimai et al., U.S. Pat. No. 5,917,798 ("Horimai") or WO99/44195 via its U.S. equivalent, U.S. Pat. No. 7,130,092 ("Horimai II") in view of either Moerner et al., U.S. Pat. No. 5,607,799 ("Moerner") or Bai et al., U.S. Pat. No. 5,665,493 ("Bai");
- (b) rejected claims 15-19 under 35 U.S.C. § 103(a) as being unpatentable over either Horimai or Horimai II in view of either Moerner or Bai and further in view of Applicants' allegedly acknowledged prior art in JP 2002-123949 ("JP 949");
- (c) rejected claims 1, 6-9, 13, and 14 under 35 U.S.C. § 103(a) as being unpatentable over Amble et al., U.S. Pat. No. 6,738,322 ("Amble") in view of Cumpston et al., U.S. Pat. No. 6,322,931 ("Cumpston");
- (d) rejected claim 3 under 35 U.S.C. § 103(a) as being unpatentable over Amble in view of Cumpston and further in view of Takeuchi et al., U.S. Pat. No. 4,856,857 ("Takeuchi");
- (e) rejected claims 15-19 under 35 U.S.C. § 103(a) as being unpatentable over Amble in view of Cumpston and further in view of Applicants' allegedly acknowledged prior art in JP 949; and

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<sup>1</sup> The Final Office Action contains a number of statements reflecting characterizations of the related art and the claims. Regardless of whether any such statement is identified herein, Applicants decline to automatically subscribe to any statement or characterization in the Final Office Action.

(f) rejected claims 22 and 23 under 35 U.S.C. § 103(a) as being unpatentable over either Horimai or Horimai II in view of either Moerner or Bai, or over Amble and Cumpston, and further in view of Hegel et al., U.S. Pat. No. 6,864,019 ("Hegel").

The Examiner did not mention claim 21 in his statements of claim rejections on pp. 2-7 of the Final Office Action, but did indicate in the Office Action Summary that claim 21 is rejected. Final Office Action, Office Action Summary Form PTOL-326.

## **II. Rejections under 35 U.S.C. § 103(a)**

### **A. Claims 1, 6-9, 13, and 14**

Applicants respectfully traverse the rejection of claims 1, 6-9, 13, and 14.

The key to supporting any rejection under 35 U.S.C. § 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. Such an analysis should be made explicit and cannot be premised upon mere conclusory statements. See M.P.E.P. § 2142, 8th Ed., Rev. 6 (Sept. 2007). "A conclusion of obviousness requires that the reference(s) relied upon be enabling in that it put the public in possession of the claimed invention." M.P.E.P. § 2145. Furthermore, "[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the results would have been predictable to one of ordinary skill in the art" at the time the invention was made. M.P.E.P. § 2143.01(III), internal citation omitted. Moreover, "[i]n determining the differences between the prior art and the claims, the question under 35 U.S.C. § 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious." M.P.E.P. § 2141.02(I), internal citations omitted (emphasis in original).

The Examiner asserted that “optical density is a function of the amount of radiation/illumination upon a record material.” Final Office Action at 3. The Examiner further asserted that, because a record material contains a servo region and a data region, which receive different amounts of radiation/illumination, the claim limitation “contains regions of differing optical density” is purportedly “present in the above combination of references.” Id. at 3. The Examiner also asserted that the recitation “the optical density of the recording layer ... decreases from the incident side toward the transparent substrate” is a desired inherent result of the recording structure as defined by the claims. Id.

In response to Applicants’ arguments in the Amendment filed April 15, 2008, the Examiner asserted that optical density is a function of transmittance and wavelength, and that it is not limited to Applicants’ definition. Id. at 4. The Examiner also questioned Applicants’ expressions for optical density, as in claims 13 and 14, because they include parameters such as numerical aperture and spot radius. Id.

Applicants respectfully disagree with the Examiner’s assertions. As Applicants established in the Amendment filed November 13, 2007, Horimai appears to teach an optical information recording medium with a recording layer, a reflecting layer and radial addressing areas. Horimai, col. 9, lines 38-48. Horimai II appears to teach an optical recording medium with a recording layer wherein information is “recorded utilizing holography in the form of interference pattern as a result of interference between information light ... and reference light.” Horimai II, col. 66, line 67 and col. 67, lines 1-3.

Neither Horimai nor Horimai II discloses or suggests Applicants' claimed invention as recited in amended independent claim 1. This is at least because neither Horimai nor Hormai II discloses or suggests "a region in the recording layer, in which a hologram is recorded, the region containing portions of differing optical density," as recited in amended independent claim 1. Further, neither Horimai nor Horimai II discloses or suggests

the optical density corresponding to the signal light in the region of the recording layer in which the hologram is recorded decreases from the incident side toward the transparent substrate

as recited in amended independent claim 1.

Neither Moerner nor Bai overcomes the deficiencies of Horimai or Horimai II. The Examiner relied on Moerner and Bai to allegedly disclose "appropriate materials for holographic recording." Id. at 2. However, neither Moerner nor Bai discloses or suggests an optical information recording medium, wherein "a region in the recording layer, in which a hologram is recorded, contains portions of differing optical density," as recited in amended independent claim 1. Instead, as Applicants established in the Amendment filed November 13, 2007, Moerner appears to teach a holographic storage device comprised of a three component optical photorefractive article, wherein recording involves the creation of internal electric fields that produce "local changes in the index of refraction." Moerner, col. 1, lines 12-14. Bai discloses rare earth doped ferroelectric materials as reversible holographic recording media. Bai, Abstract. For at least these reasons, Horimai or Horimai II in view of Moerner or Bai does not disclose or suggest Applicants' claimed invention as recited in amended independent claim 1. Amended independent claim 1 should be allowable over Horimai or Horimai II

in view of Moerner or Bai. Amended independent claims 8, 9, 13, and 14, while differing in scope, recite similar limitations as claim 1 and should also be allowable. Claims 6 and 7 should be allowable at least due to their dependence from claim 1. Applicants therefore request withdrawal of the rejection of claims 1, 6-9, 13, and 14.

**B. Claims 15-19**

Applicants respectfully traverse the rejection of claims 15-19. As established above, each of independent claims 1, 8, 9, 13, and 14 should be allowable over Horimai or Horimai II in view of Moerner or Bai. Claims 15-19 should also be allowable, at least due to their dependence from claim 1, 8, 9, 13, or 14.

Referring to JP 949, the Examiner asserted that claims 15-19 “are drawn to [a] particular holographic recording method[] i.e., ‘polarized collinear,’” and that Applicants “have acknowledged such a method as being well known in the prior art.” Final Office Action at 4. Applicants respectfully disagree. The Examiner refers to paragraph [0007] of the pre-grant publication of the instant application, U.S. Pat. App. Pub. No. 2004/0179457. Id. This portion of the pre-grant publication appears to correspond to page 1, line 36, through page 2, line 9, of Applicants’ specification. In the specification, Applicants refer to JP 949’s apparent disclosure of polarized collinear holographic recording on a conventional optical information recording medium. Specification, page 2, lines 15-18. Applicants discuss problems associated with the use of polarized collinear holographic recording on a conventional medium. Id.

Nevertheless, regardless of JP 949’s disclosure regarding polarized collinear holographic recording, JP 949 does not overcome the deficiencies of Horimai, Horimai II, Moerner, or Bai. This is at least because JP 949 does not disclose or

suggest “a region in the recording layer, in which a hologram is recorded, contains portions of differing optical density,” as recited in amended independent claim 1 and similarly recited in amended independent claims 8, 9, 13, and 14.

Therefore, independent claims 1, 8, 9, 13, and 14 should be allowable over Horimai or Horimai II in view of Moerner or Bai and further in view of JP 949. Claims 15-19 should be allowable, at least due to their dependence from claim 1, 8, 9, 13, or 14. Applicants therefore request withdrawal of the rejection of claims 15-19.

**C. Claims 1, 6-9, 13, and 14**

Applicants respectfully traverse the rejection of claims 1, 6-9, 13, and 14. Neither Amble nor Cumpston discloses or suggests an optical information recording medium, wherein “a region in the recording layer, in which a hologram is recorded, contains portions of differing optical density,” as recited in amended independent claim 1. Instead, as Applicants established in the Amendment filed April 15, 2008, Amble discloses an “optical data storage system compris[ing] an optical medium including a servo plane and at least one data plane.” Amble, Abstract. Cumpston discloses “an optical data storage system utilizing a host material and molecules that exhibit non-linear absorption dissolved therein.” Cumpston, Abstract.

At least for this reason, neither Amble nor Cumpston discloses or suggests Applicants’ claimed invention as recited in amended independent claim 1. Amended independent claim 1 should be allowable over Amble in view of Cumpston. Claims 6 and 7 should be allowable due to their dependence from claim 1. Amended independent claims 8, 9, 13, and 14, while differing in scope, recite similar limitations as

claim 1 and should also be allowable. Applicants therefore request withdrawal of the rejection of claims 1, 6-9, 13, and 14.

**D. Claim 3**

Applicants respectfully traverse the rejection of claim 3. As established above, independent claim 1 should be allowable over Amble in view of Cumpston. Claim 3 should be allowable, at least due to its dependence from base claim 1.

Takeuchi does not overcome the deficiencies of Amble or Cumpston. This is at least because Takeuchi does not disclose or suggest an optical information recording medium, wherein “a region in the recording layer, in which a hologram is recorded, contains portions of differing optical density,” as recited in amended independent claim 1. Instead, as Applicants established in the Amendment filed April 15, 2008, Takeuchi merely discloses “a transparent hologram-forming layer and a holographic effect-enhancing layer” and that “[t]he holographic effect-enhancing layer has a refractive index different from that of the transparent hologram-forming layer.”

Takeuchi, Abstract. Thus Amble in view of Cumpston and further in view of Takeuchi does not disclose or suggest Applicants’ claimed invention as recited in amended independent claim 1. Amended independent claim 1, and claim 3 which depends from claim 1, should be allowable. Applicants request withdrawal of the rejection of claim 3.

**E. Claims 15-19**

Applicants respectfully traverse the rejection of claims 15-19. As established above, independent claims 1, 8, 9, 13, and 14 should be allowable over Amble in view of Cumpston. Claims 15-19 should also be allowable over Amble and Cumpston, at

least due to their dependence from claim 1, 8, 9, 13, or 14. As also established above, claims 15-19 should also be allowable over JP 949.

JP 949 fails to overcome the deficiencies of Amble or Cumpston, at least because JP 949 does not disclose or suggest an optical information recording medium, wherein "a region in the recording layer, in which a hologram is recorded, contains portions of differing optical density," as recited in amended independent claim 1. For at least this reason, amended independent claim 1 should be allowable over Amble in view of Cumpston and further in view of JP 949. Amended independent claims 8, 9, 13, and 14, while differing in scope, recite similar limitations as claim 1 and should also be allowable. Claims 15-19 should be allowable, at least due to their dependence from claim 1, 8, 9, 13, or 14. Applicants therefore request withdrawal of the rejection of claims 15-19.

#### **F. Claims 22 and 23**

Applicants respectfully traverse the rejection of claims 22 and 23. As established above, amended independent claim 1 should be allowable over Horimai or Horimai II in view of Moerner or Bai, and also should be allowable over Amble in view of Cumpston.

The Examiner asserted that the initiator of claims 22 and 23 is Irgacure 784 and that it is purportedly disclosed by Hegel. Final Office Action at 6. Without acceding to this assertion, Applicants submit that Hegel does not overcome the deficiencies of Horimai, Horimai II, Moerner, Bai, Amble, or Cumpston. This is at least because Hegel does not disclose or suggest an optical information recording medium, wherein "a region in the recording layer, in which a hologram is recorded, the region containing portions of differing optical density," as recited in amended independent claim 1.



Instead, Hegel discloses "holographic recording material ... sandwiched between two substrates." Hegel, Abstract.

Amended independent claim 1 should therefore be allowable over Horimai or Horimai II in view of Moerner or Bai, or over Amble and Cumpston, and further in view of Hegel. Claims 22 and 23 should also be allowable, at least because of their dependence from claim 1. Applicants therefore request withdrawal of the rejection of claims 22 and 23.

**III. Conclusion:**

In view of the foregoing, Applicants respectfully request reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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